

2008 Honda Civic GX

2006-08 ELECTRICAL Charging System (K20Z3) - Civic (All Except Si)

2006-08 ELECTRICAL

Charging System (K20Z3) - Civic (All Except Si)

COMPONENT LOCATION INDEX

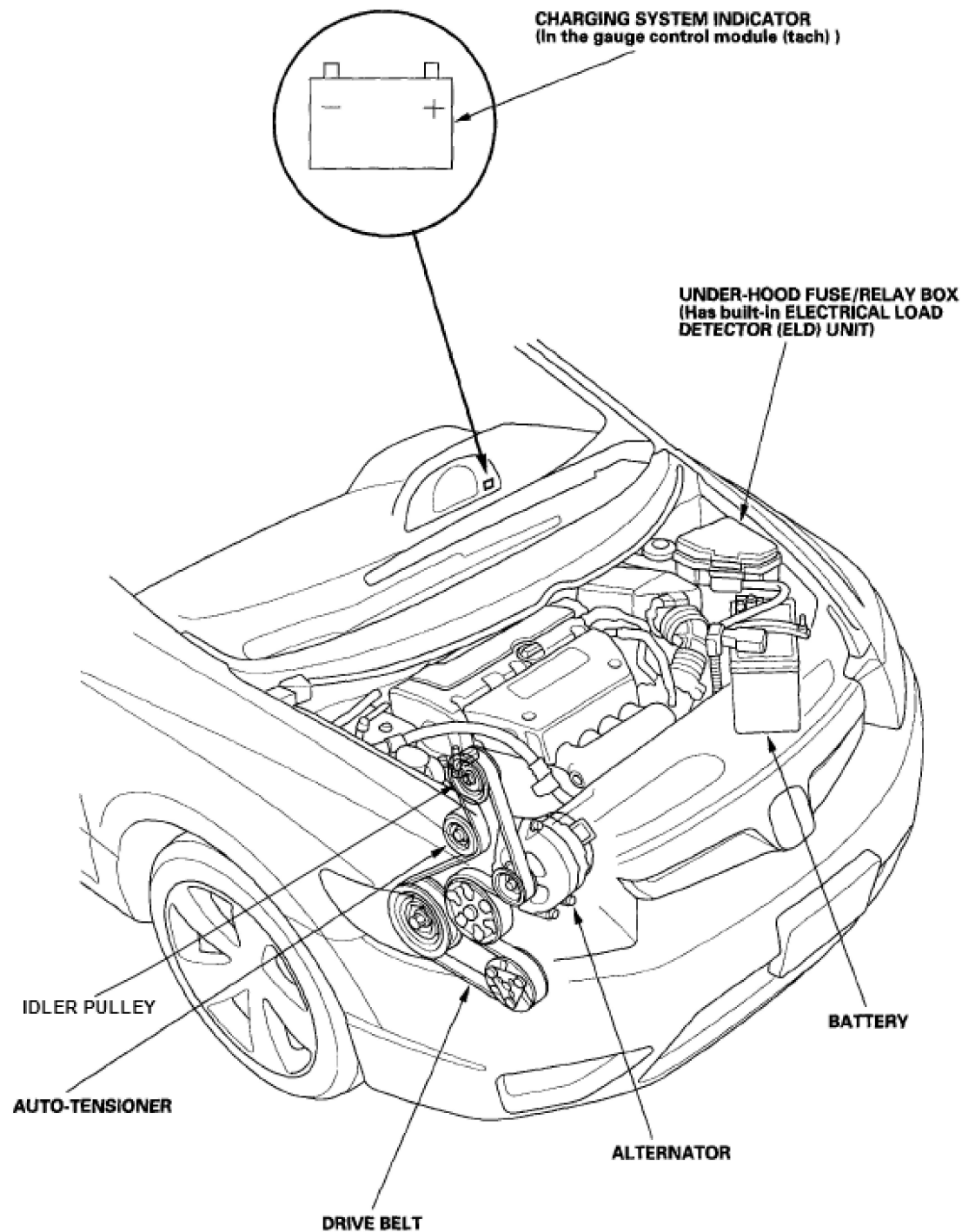


Fig. 1: Locating Charging System Components (K20Z3)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

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Symptom	Diagnostic procedure
Charging system indicator does not come on with the ignition switch ON (II)	<u>TROUBLESHOOT THE CHARGING SYSTEM INDICATOR CIRCUIT</u>
Charging system indicator stays on	1. Check for PGM-FI DTCs (see <u>GENERAL TROUBLESHOOTING INFORMATION</u>). 2. Troubleshoot the charging system indicator circuit (see <u>CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING</u>). 3. Check for a broken drive belt (see <u>DRIVE BELT INSPECTION</u>). 4. Check the drive belt auto-tensioner (see <u>DRIVE BELT AUTO-TENSIONER INSPECTION</u>).
Battery discharged	1. Check for excessive parasitic electrical current draw with the ignition switch off, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models. 2. Check for a broken drive belt (see <u>DRIVE BELT INSPECTION</u>). 3. Check the drive belt auto-tensioner (see <u>DRIVE BELT AUTO-TENSIONER INSPECTION</u>).

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	4. Troubleshoot the alternator and regulator circuit (see <u>ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING</u>). 5. Check for a poor connection at the battery terminal. 6. Test the battery (see <u>BATTERY TEST</u>).
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see <u>ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING</u>). 2. Test the battery (see <u>BATTERY TEST</u>).

CIRCUIT DIAGRAM

2008 Honda Civic GX

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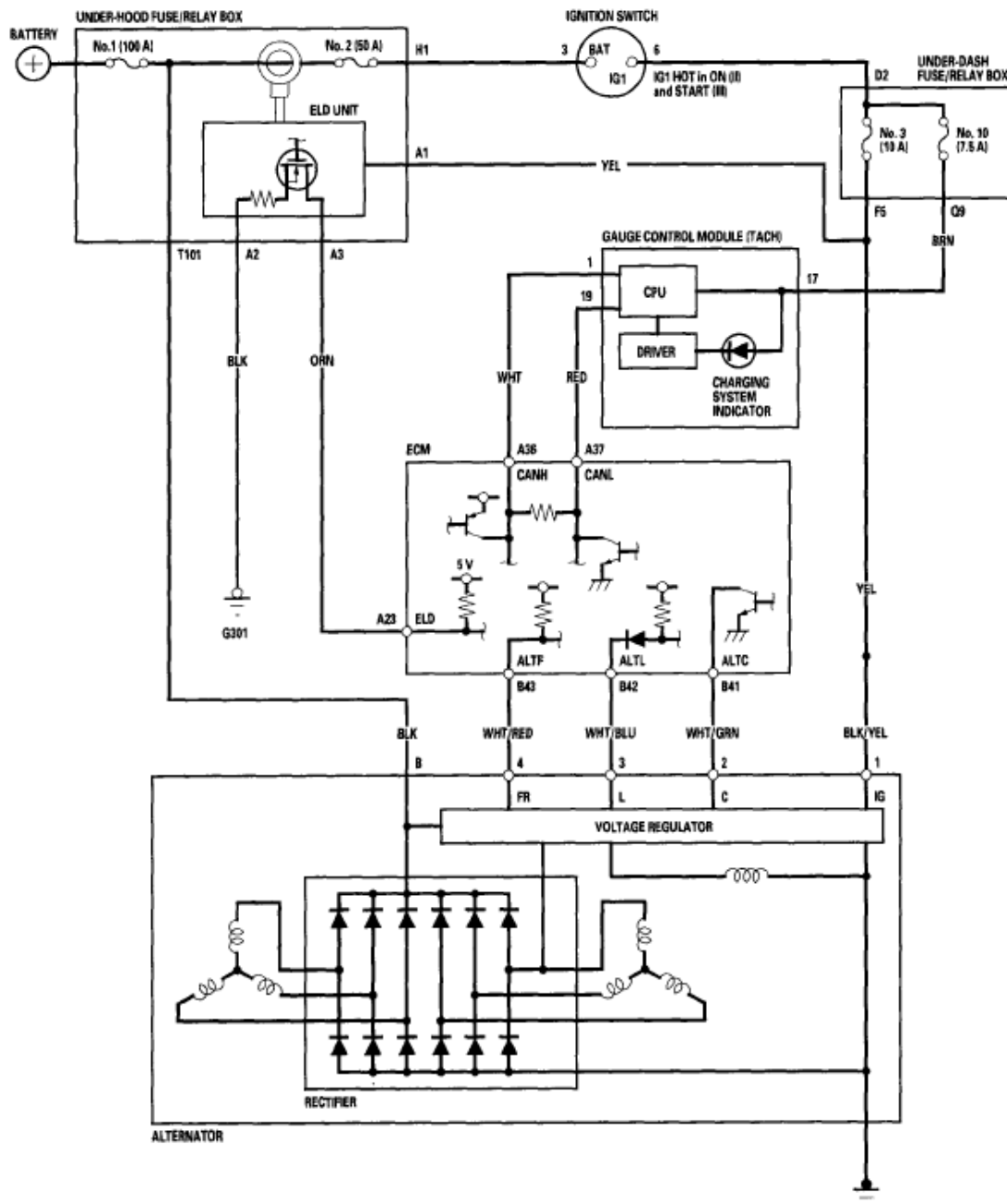


Fig. 2: Charging System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).

Does the charging system indicator come on?

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YES - Go to step 2.

NO - Go to step 14.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

Does the charging system indicator go off?

YES - Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).

NO - Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

Does the charging system indicator flash?

YES - Go to step 4.

NO - Replace the gauge control module (tach) (see **REPLACEMENT**).

4. Turn the ignition switch OFF.
5. Disconnect the alternator 4P connector.
6. Turn the ignition switch ON (II).

Does the charging system indicator go off?

YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO - Go to step 7.

7. Turn the ignition switch OFF.
8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 in **HOW TO USE THE HDS (HONDA DIAGNOSTIC**

SYSTEM).

9. Turn the ignition switch ON (II).
10. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
11. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM from damage.

12. Disconnect ECM connector B (44P).
13. Check for continuity between ECM connector terminal B42 and body ground.

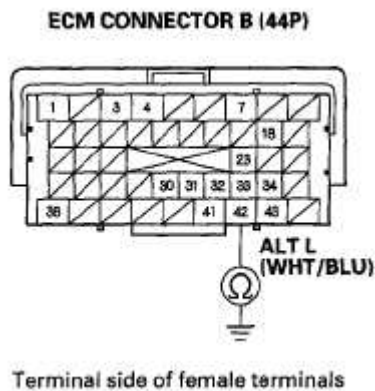


Fig. 3: Checking Continuity Between ECM Connector Terminal B42 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the alternator and the ECM.

NO - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

14. Do the gauge control module self-diagnostic function procedure (see **SELF-**

DIAGNOSTIC FUNCTION)

Does the charging system indicator flash?

YES - Go to step 15.

NO - Replace the gauge control module (tach) (see **REPLACEMENT**).

15. Turn the ignition switch OFF.

16. Disconnect the alternator 4P connector.

17. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

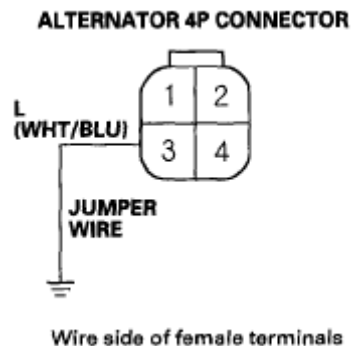


Fig. 4: Connecting Alternator 4P Connector Terminal No. 3 And Body Ground With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Turn the ignition switch ON (II).

Does the charging system indicator come on?

YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO - Go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC)

(see step 2 in **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).

21. Turn the ignition switch ON (II).
22. Make sure the HDS communicates with the vehicle and the ECM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
23. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM from damage.

24. Disconnect ECM connector B (44P).
25. Check for continuity between ECM connector terminal B42 and alternator 4P connector terminal No. 3.

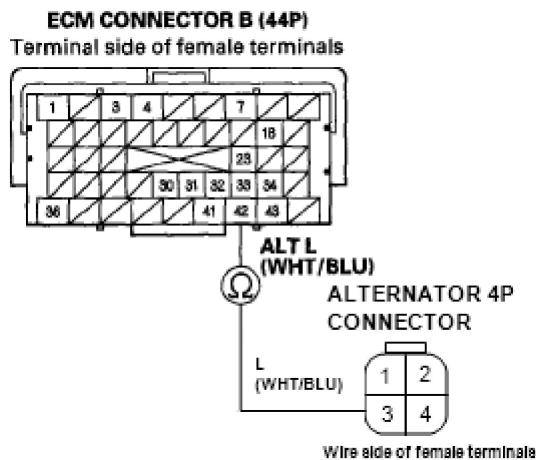


Fig. 5: Checking Continuity Between ECM Connector Terminal B42 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Update the ECM if it does not have the latest software (see **UPDATING THE ECM**), or substitute a known-good ECM (see **SUBSTITUTING THE ECM**), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see **ECM REPLACEMENT**).

NO - Repair open in the wire between the alternator and the ECM.

ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING

1. Make sure the battery connections are good and the battery is sufficiently charged.
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).

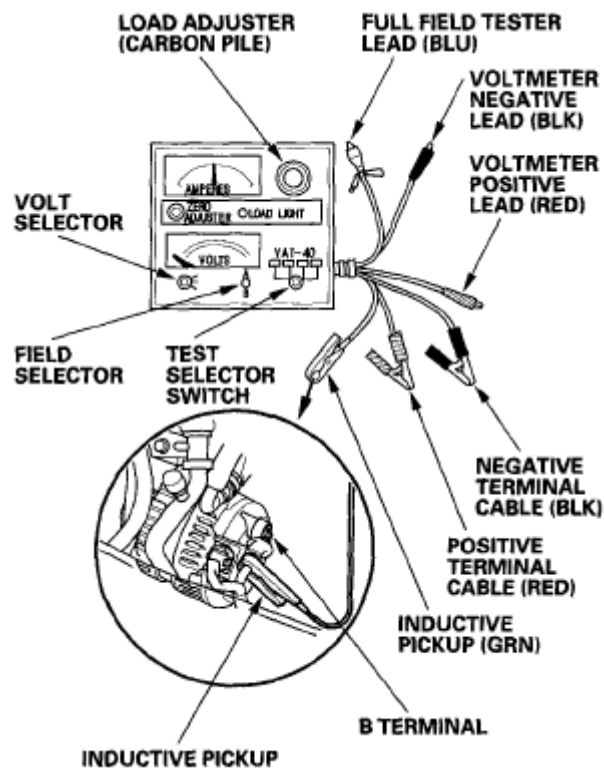


Fig. 6: Turning Selector Switch To Position 1 (Starting)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Start the engine. Hold the engine speed at 3,000 rpm, with no load until the radiator fan comes on, then let it idle.
4. Raise the engine speed to 2,000 rpm, and hold it there.

Is the voltage over 15.1 V?

YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or rear housing assembly (see **ALTERNATOR**

OVERHAUL).

NO - Go to step 5.

5. Release the accelerator pedal, and let the engine idle.
6. Turn off all the accessories. Select the charging test on the tester.
7. Remove the inductive pickup, and zero the ammeter.
8. Place the inductive pickup over the B terminal wire of the alternator so the arrow points away from the alternator.
9. Raise the engine speed to 2,000 rpm, and hold it there.

Is the voltage less than 13.5 V?

YES - Go to alternator control circuit troubleshooting (see **ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING**).

NO - Go to step 10.

10. Apply a load with the VAT-40 until the battery voltage drops within 12-13.5 V.

Is the amperage 87.5 A or more?

YES - The charging system is OK.

NOTE: **If the charging system indicator is still on, replace the alternator (see ALTERNATOR REMOVAL AND INSTALLATION).**

NO - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 in **HOW TO USE THE HDS (HONDA DIAGNOSTIC**

SYSTEM)).

2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Disconnect the alternator 4P connector from the alternator.
6. Start the engine, and turn on the headlights to high beam.
7. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.

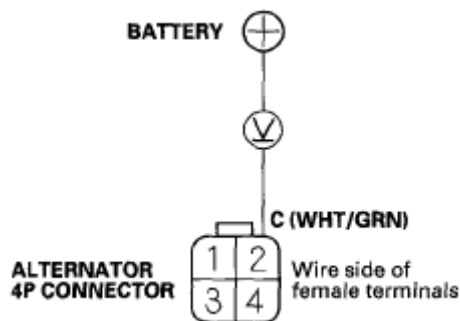


Fig. 7: Measuring Voltage Between Alternator 4P Connector Terminal No. 2 And Positive Terminal Of Battery

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 1 V or less?

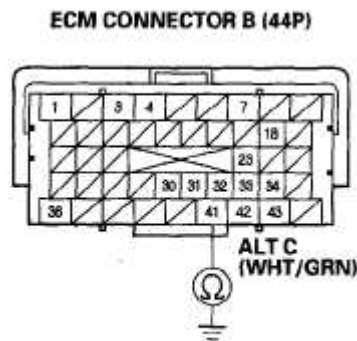
YES - Go to step 11.

NO - Go to step 8.

8. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM from damage.

9. Disconnect ECM connector B (44P).
10. Check for continuity between ECM connector terminal B41 and body ground.



Terminal side of female terminals

Fig. 8: Checking Continuity Between ECM Connector Terminal B41 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the alternator and the ECM.

NO - Update the ECM if it does not have the latest software (see UPDATING THE ECM), or substitute a known-good ECM (see SUBSTITUTING THE ECM), then recheck. If the symptom/indication goes away with a known-good ECM, replace the original ECM (see ECM REPLACEMENT).

11. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM from damage.

12. Disconnect ECM connector B (44P).
13. Check for continuity between ECM connector terminal B41 and alternator 4P connector terminal No. 2.

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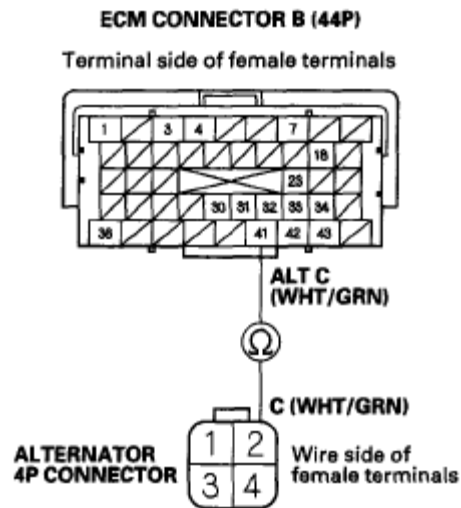


Fig. 9: Checking Continuity Between ECM Connector Terminal B41 And Alternator 4P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO - Repair open in the wire between the alternator and the ECM.

DRIVE BELT INSPECTION

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see **DRIVE BELT INSPECTION**).

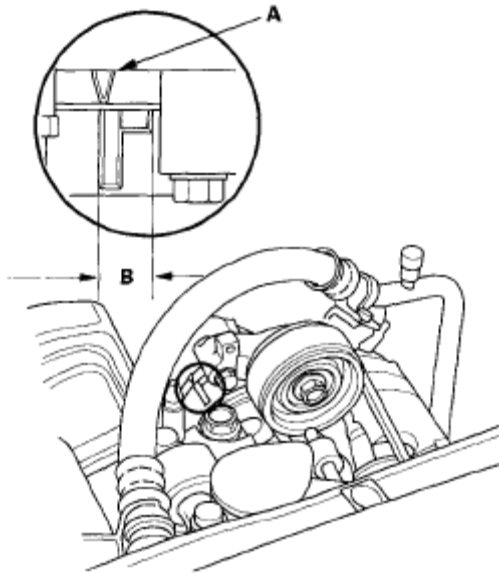


Fig. 10: Checking Auto-Tensioner Indicator Is Within Standard Range
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVE BELT REMOVAL/INSTALLATION

Special Tools Required

Belt tension release tool Snap-on YA9317 or equivalent, commercially available

1. Move the auto-tensioner (A) using the belt tension release tool to relieve tension from the drive belt, then remove the drive belt.

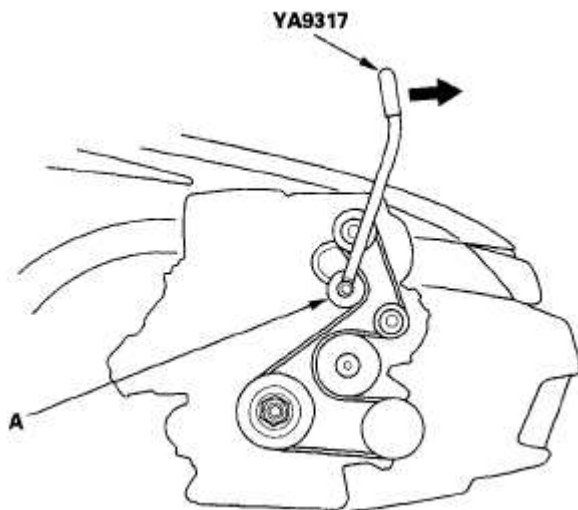


Fig. 11: Moving Auto-Tensioner Using Belt Tension Release Tool To Relieve Tension From Drive Belt

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new belt in the reverse order of removal.

DRIVE BELT AUTO-TENSIONER INSPECTION

Special Tools Required

Belt tension release tool Snap-on YA9317 or equivalent, commercially available

1. Turn the ignition switch ON (II), and make sure to turn the A/C switch OFF. Turn the ignition switch OFF.
2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine then check the position again with the engine idling. If the position of the indicator moves or fluctuates a lot, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

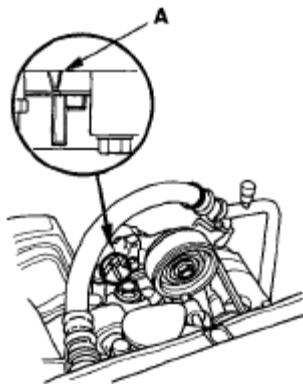


Fig. 12: Checking Position Of Auto-Tensioner Indicator's Pointer

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the tensioner pulley.
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Move the auto-tensioner within its limit using the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or you hear abnormal

noise, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

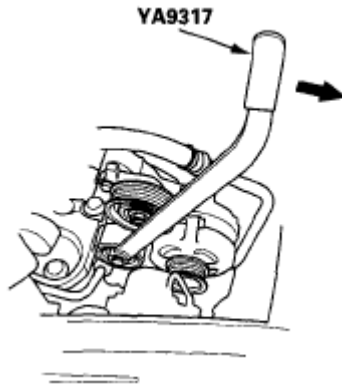


Fig. 13: Moving Auto-Tensioner Within Its Limit Using Belt Tension Release Tool

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
7. Clamp the auto-tensioner (A) by using two 8 mm bolts (B) and a vise (C) as shown. Do not clamp the auto-tensioner itself.

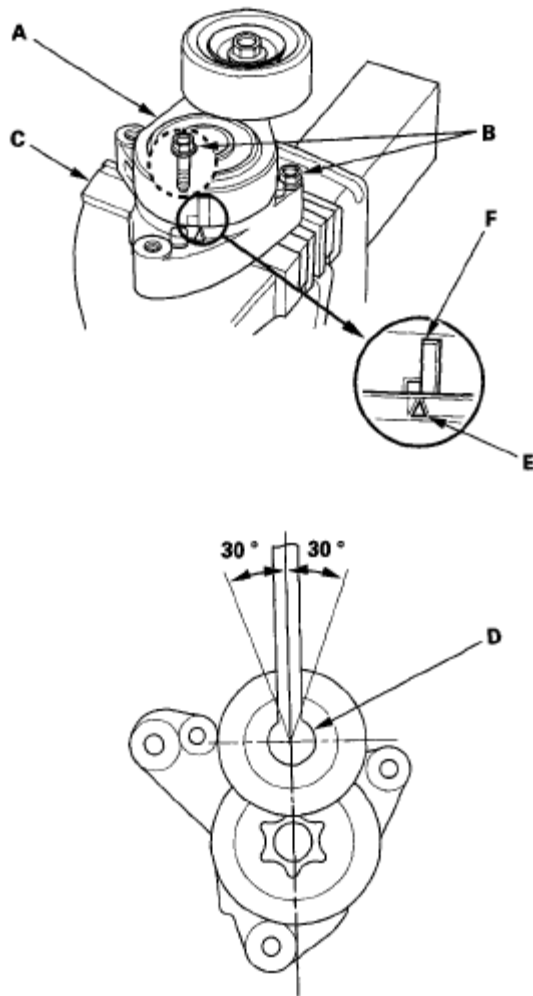


Fig. 14: Clamping Auto-Tensioner

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Set the torque wrench (D) in the pulley bolt in the direction shown.
9. Align the indicator (E) on the tensioner base with center mark (F) on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.

NOTE: If the indicator exceeds the center mark, recheck the torque.

Auto-tensioner Spring Torque: 32.5-39.7 N.m (3.31-4.05 kgf.m, 23.9-29.3 lbf.ft)

DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Remove the idler pulley base.

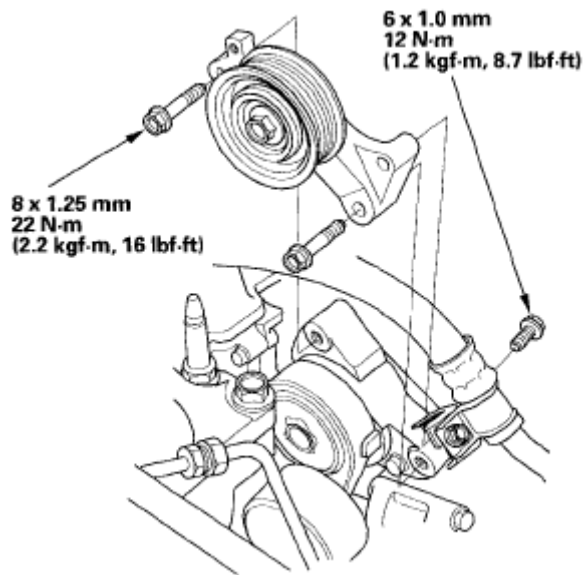


Fig. 15: Removing Idler Pulley Base

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the pulley bolt (A), then remove the tensioner pulley (B).

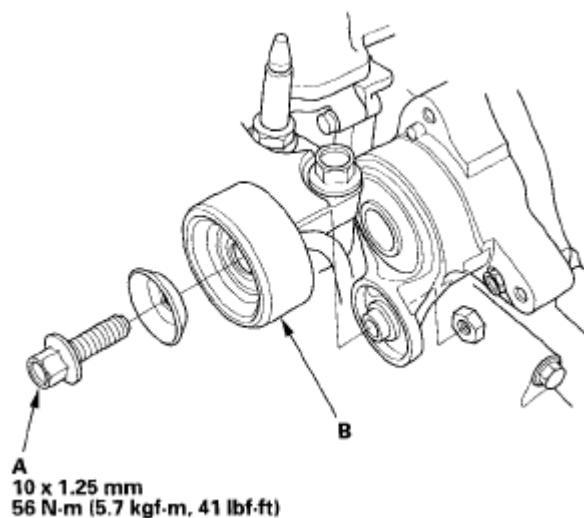


Fig. 16: Removing Pulley Bolt And Tensioner Pulley

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the auto-tensioner.

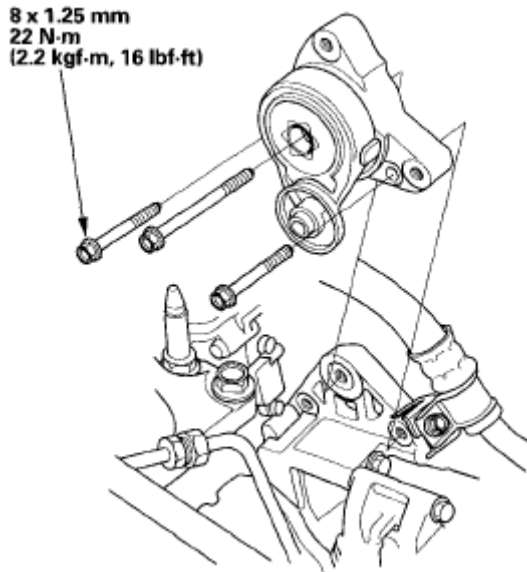


Fig. 17: Removing Auto-Tensioner
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the auto-tensioner in the reverse order of removal.

TENSIONER PULLEY REPLACEMENT

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Remove the pulley bolt (A), then remove the tensioner pulley (B).

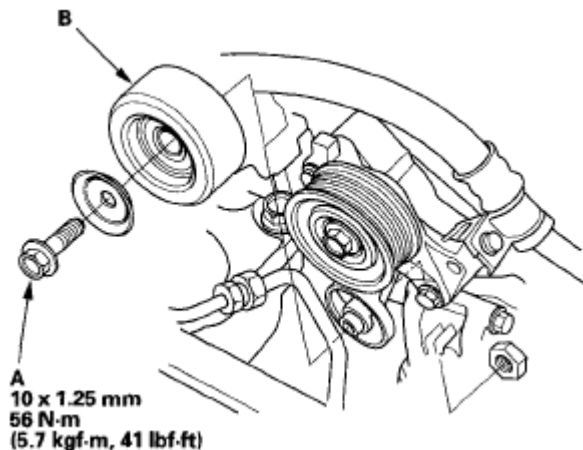


Fig. 18: Removing Pulley Bolt And Tensioner Pulley

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the tensioner pulley in the reverse order of removal.

IDLER PULLEY REPLACEMENT

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Remove the idler pulley.

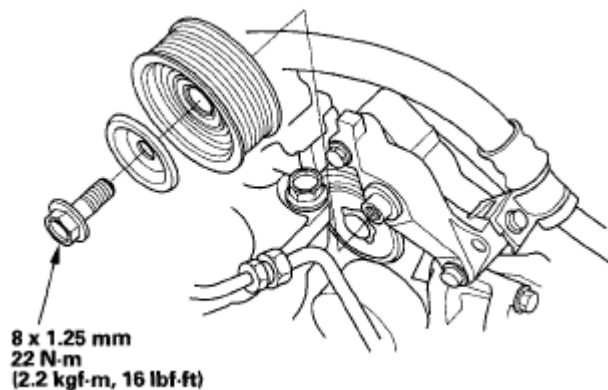


Fig. 19: Removing Idler Pulley

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the idler pulley in the reverse order of removal.

ALTERNATOR REMOVAL AND INSTALLATION

REMOVAL

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the drive belt (see **DRIVE BELT INSPECTION**).
4. Remove the front grille cover (see **FRONT GRILLE COVER REPLACEMENT**).
5. Disconnect the fan motor connectors (A) and hood switch connector (B), then remove the harness clamps (C).

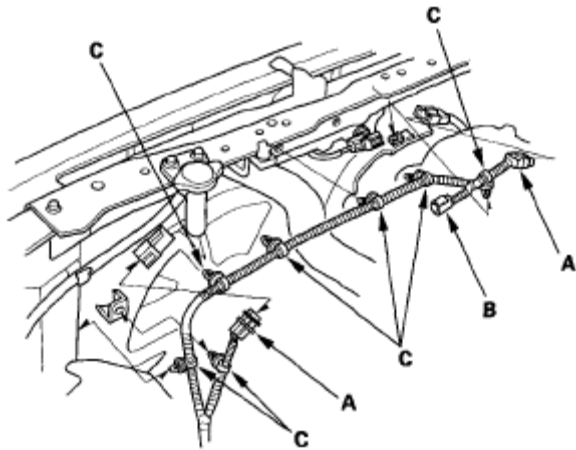


Fig. 20: Disconnecting Fan Motor Connectors And Hood Switch Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the reservoir hose (A), radiator cap base mounting bolts (B), clips (C) and radiator upper brackets (D).

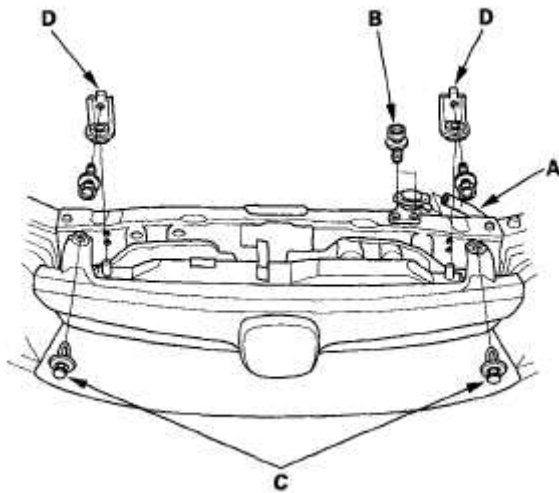


Fig. 21: Removing Reservoir Hose, Radiator Cap Base Mounting Bolts, Clips And Radiator Upper Brackets

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the condenser bracket mounting bolts (A), then remove the bulkhead (B).

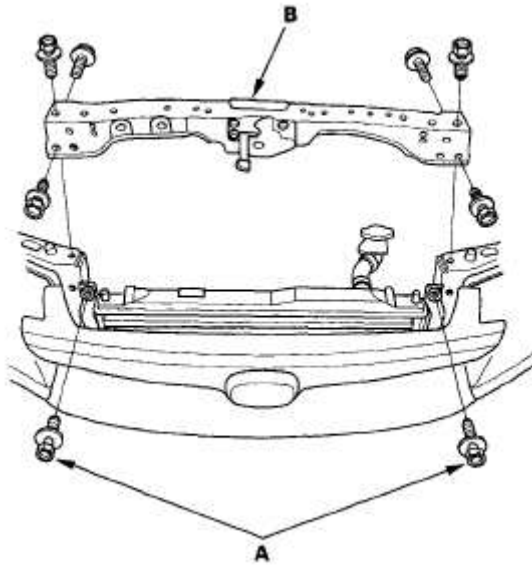


Fig. 22: Removing Condenser Bracket Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the three bolts securing the alternator.

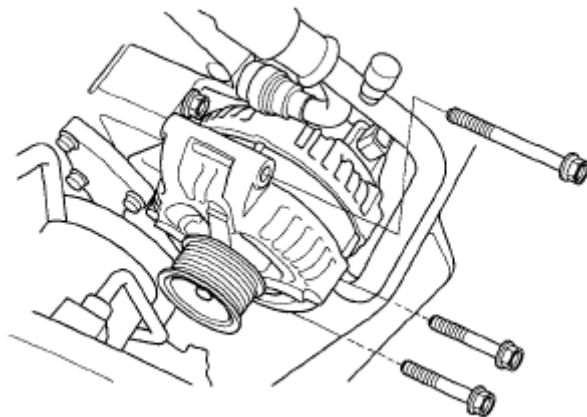


Fig. 23: Removing Alternator Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Disconnect the alternator connector (A), BLK wire (B) and harness clamp (C) from the alternator, then remove the alternator.

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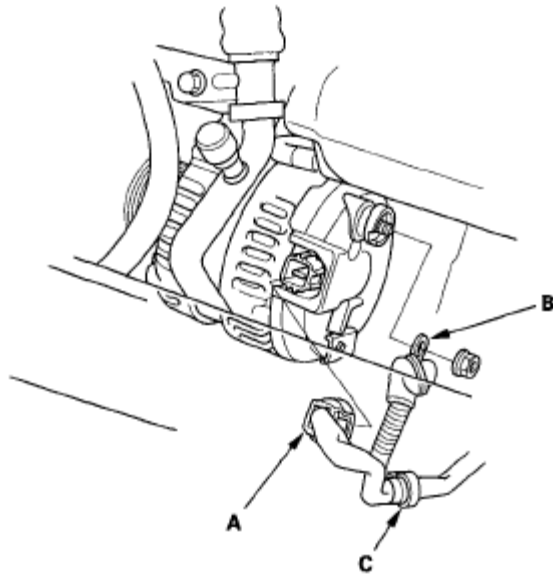


Fig. 24: Removing Alternator

Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Connect the alternator connector (A), BLK wire (B) and harness clamp (C) to the alternator.

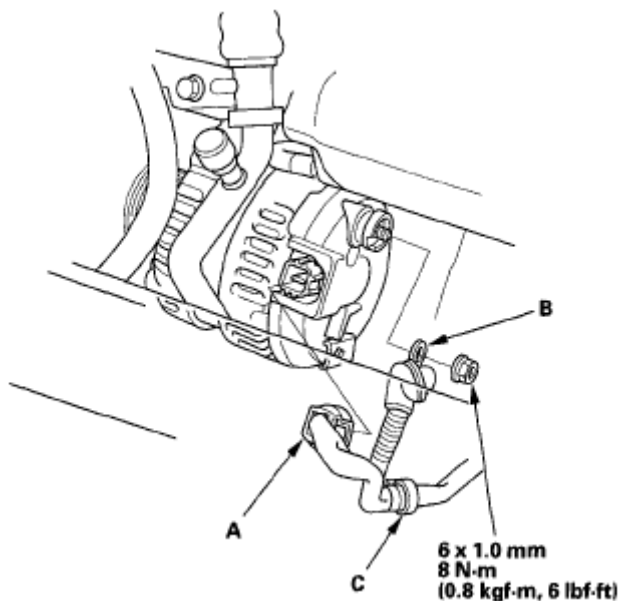


Fig. 25: Connecting Alternator Connector, BLK Wire And Harness Clamp To Alternator (With Specifications)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Tighten the three bolts securing the alternator.

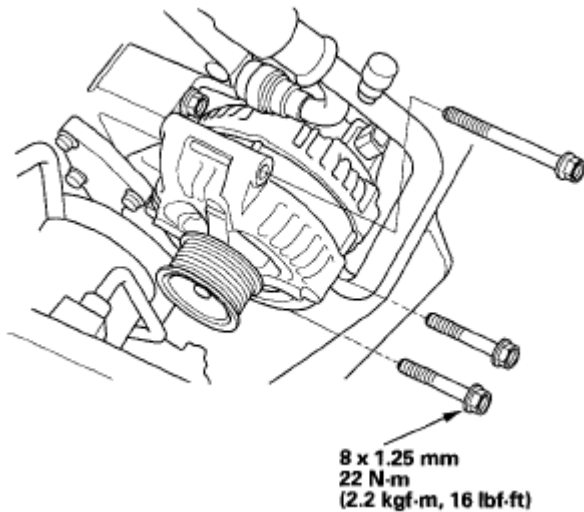


Fig. 26: Tightening Alternator Bolts (With Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the bulkhead (A), then install the condenser bracket mounting bolts (B).

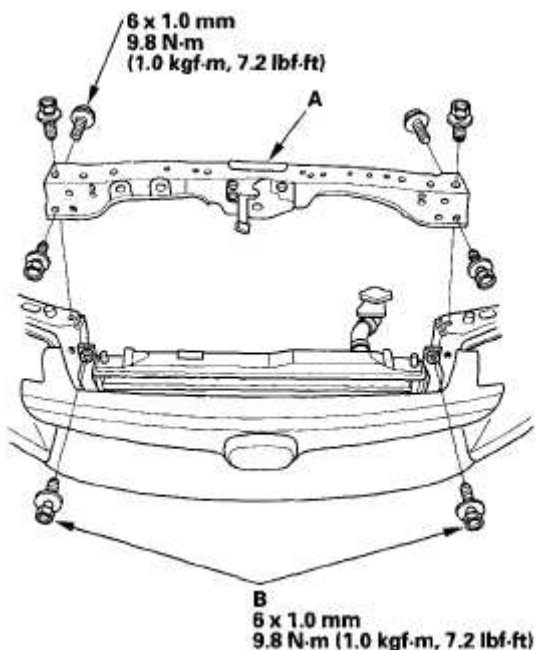


Fig. 27: Installing Condenser Bracket Mounting Bolts (With

Specifications)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Apply body paint to the bulkhead mounting bolts.
5. Install the radiator upper brackets (A), radiator cap base mounting bolts (B), reservoir hose (C), and Clips (D).

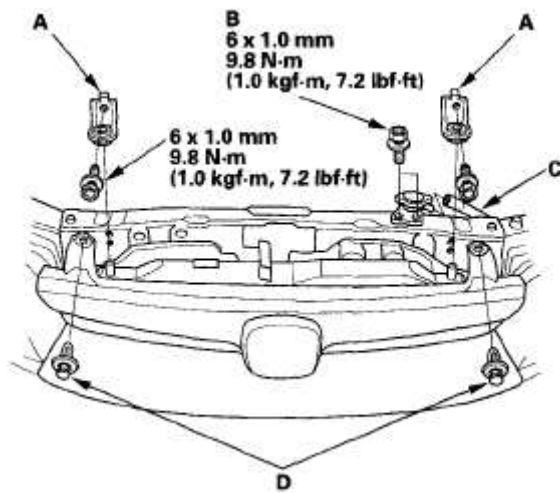


Fig. 28: Installing Radiator Upper Brackets And Radiator Cap Base Mounting Bolts (With Specifications)

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Connect the fan motor connectors (A) and hood switch connector (B), then install the harness clamps (C).

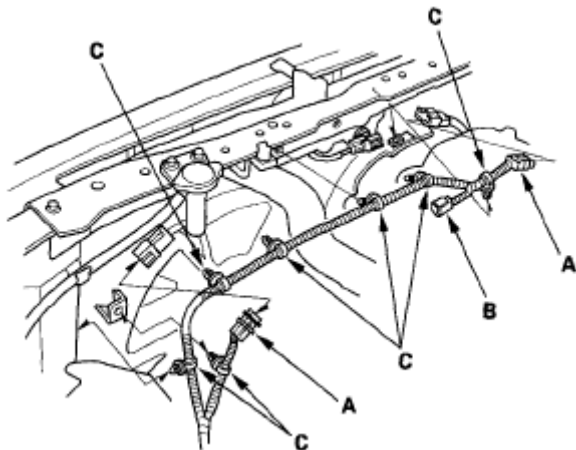


Fig. 29: Connecting Fan Motor And Hood Switch Connectors

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the front grille cover (see **FRONT GRILLE COVER REPLACEMENT**).
8. Install the drive belt (see **DRIVE BELT INSPECTION**).
9. Connect the positive cable to the battery first, then connect the negative cable.
10. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio preset.
11. Set the clock.

ALTERNATOR OVERHAUL

EXPLODED VIEW

2008 Honda Civic GX

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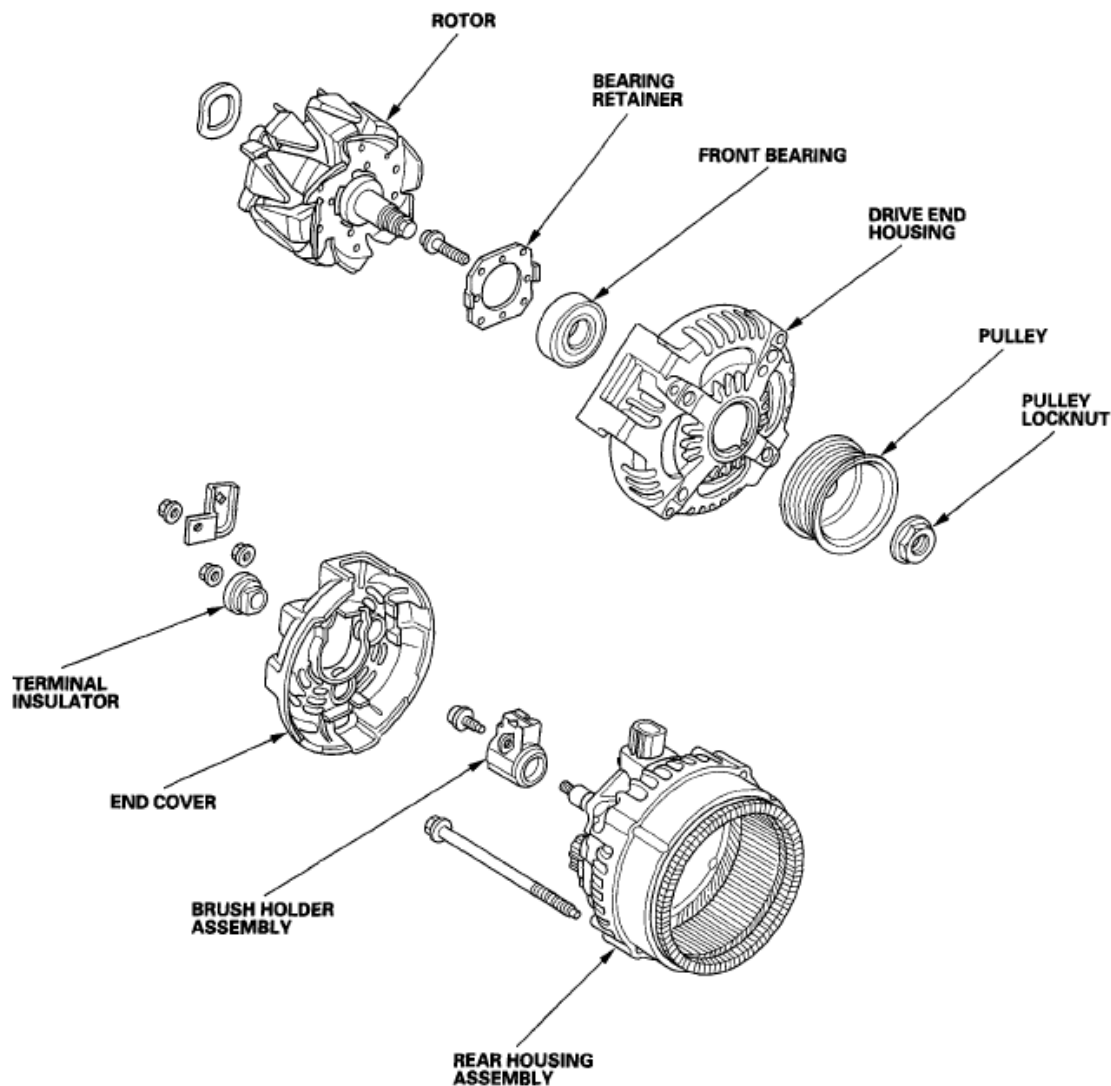


Fig. 30: Exploded View Of Alternator Overhaul
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

NOTE: Refer to Fig. 30 as needed during this procedure.

1. Test the alternator and regulator before you remove them (see **ALTERNATOR AND REGULATOR CIRCUIT**)

TROUBLESHOOTING).

2. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.

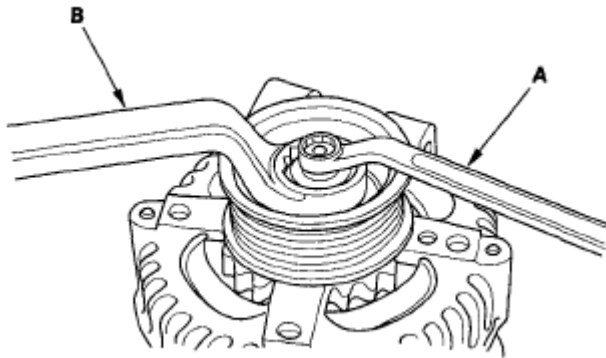


Fig. 31: Removing Locknut With Wrench
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the harness stay and the three flange nuts from the alternator.

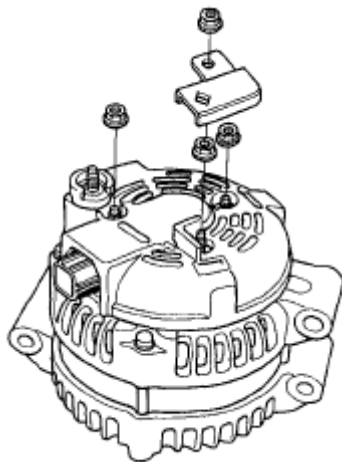


Fig. 32: Removing Harness Stay And Flange Nuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the end cover.

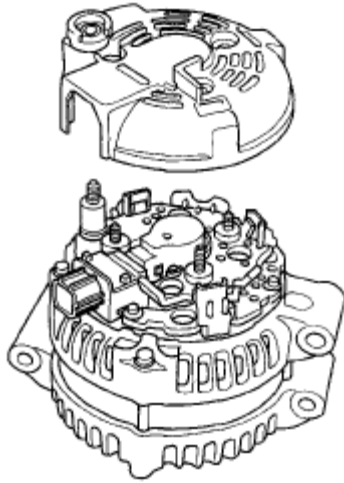


Fig. 33: Removing End Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the brush holder.

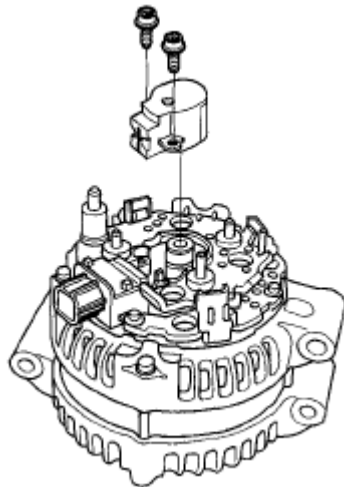


Fig. 34: Removing Brush Holder

Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the four bolts, then remove the rear housing assembly (A), and washer (B).

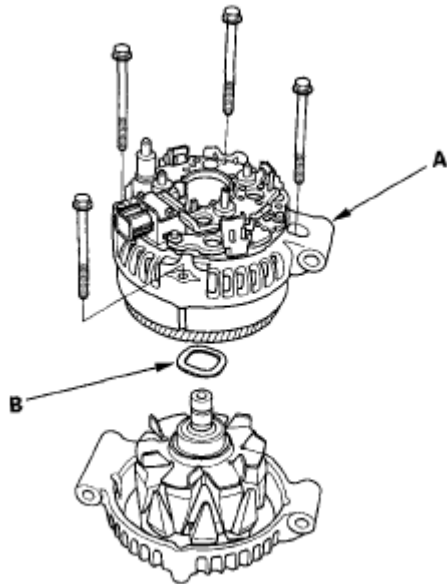


Fig. 35: Removing Rear Housing Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. If you are not replacing the front bearing, go to step 13. Remove the rotor from the drive end housing.

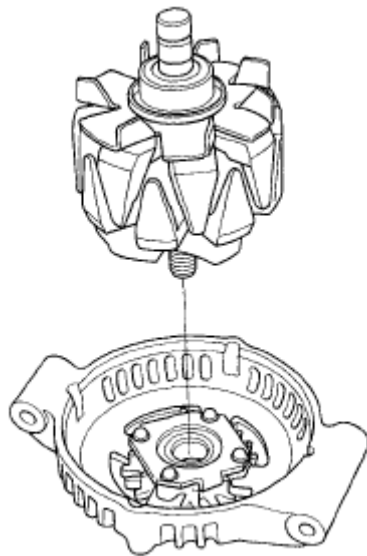


Fig. 36: Removing Rotor
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.

- If the rotor is damaged, replace the rotor assembly.
- If the rotor is OK, go to step 10.

10. Remove the front bearing retainer plate.

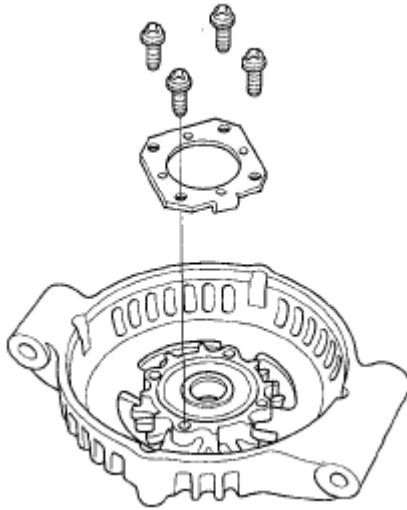


Fig. 37: Removing Front Bearing Retainer Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Drive out the front bearing with a brass drift and hammer.

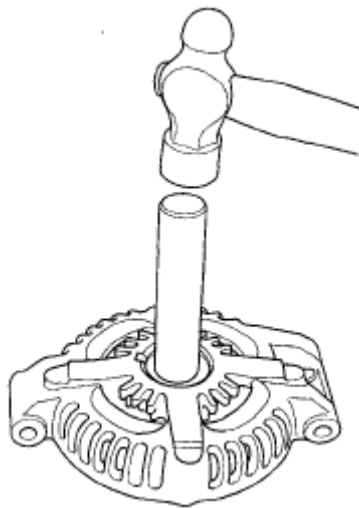


Fig. 38: Removing Front Bearing With Brass Drift And Hammer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. With a hammer and special tools, install a new front bearing in the drive end

housing.

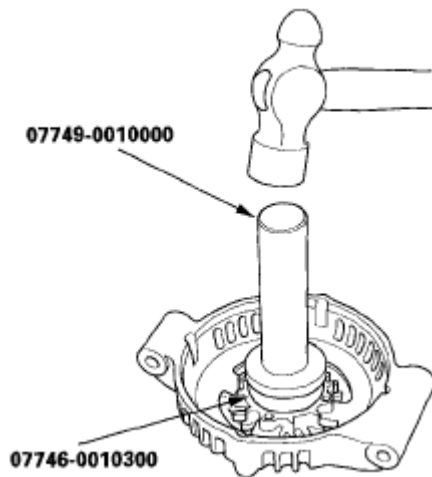


Fig. 39: Installing Front Bearing In Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Alternator Brush Inspection

13. Measure the length of both brushes (A) with vernier caliper (B).
 - If either brush is shorter than the service limit, replace the brush holder assembly.
 - If brush length is OK, go to step 14.

Alternator Brush Length

Standard (New): 10.5 mm (0.41 in.)

Service Limit: 1.5 mm (0.06 in.)

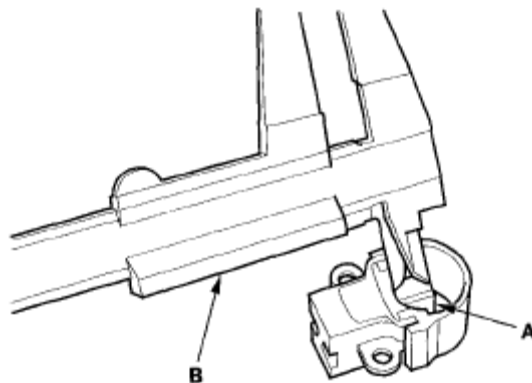


Fig. 40: Measuring Length Of Brushes

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rotor Slip Ring Test

14. Check for continuity between the slip rings (A).
 - If there is continuity, go to step 15.
 - If there is no continuity, replace the rotor assembly.

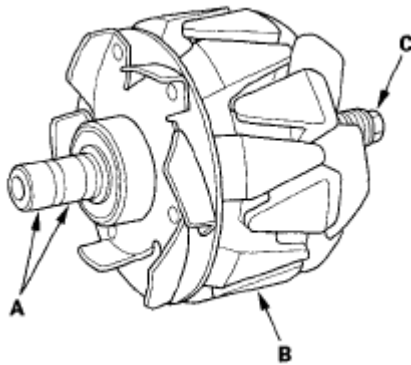


Fig. 41: Checking Continuity Between Slip Rings

Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).
 - If there is no continuity, replace the rear housing assembly, and go to step 16.
 - If there is continuity, replace the rotor assembly.

Alternator Reassembly

16. If you removed the pulley, put the rotor in the drive end housing, then tighten its locknut to 110 N.m (11.2 kgf.m, 81.0 lbf.ft).
17. Remove any grease or any oil from the slip rings.
18. Put the rear housing assembly and drive end housing/rotor assembly together, tighten the four through bolts.
19. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.6 mm (0.06 in.) diameter) to hold them there.

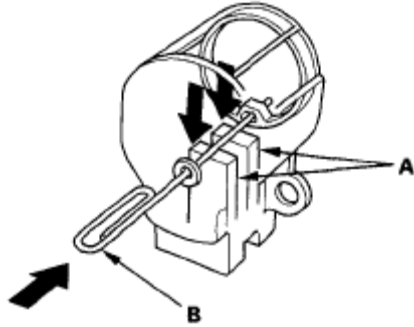


Fig. 42: Pushing Brushes In And Inserting Pin Or Drill Bit To Hold
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the brush holder, and pull out the pin.

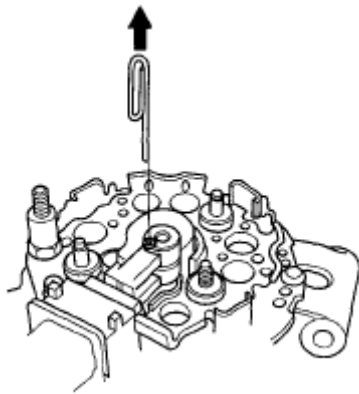


Fig. 43: Installing Brush Holder And Removing Pin
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the end cover.
22. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.
23. Install the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) and drive belt (see **DRIVE BELT INSPECTION**).